

Yu, Guanghua et al.

Appl. No. 10/034,507

Filed: December 28, 2001

Atty. Docket No. 20740-RA

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IN THE CLAIMS:

Please substitute the following amended claims:

1. (cancelled)

2. (cancelled)

3. (cancelled)

4. (cancelled)

5. (cancelled)

6. (cancelled)

7. (cancelled)

8. (cancelled)

9. (cancelled)

10. (cancelled)

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11. (original) An apparatus for filtration of water from hydrocarbons comprised of

- a) a top chamber;
- b) a feed chamber;
- c) a chamber for water settling;
- d) a permeate chamber;
- e) a fresh-feed inlet, communicating with said feed chamber;
- f) a first dead end filter, having a filter medium that is hydrophobic, communicating on its inlet side with said feed chamber and on its outlet side with said top chamber;
- g) a perforated tube sleeve guide containing said first dead end filter;
- h) a second cross-flow filter, having a membrane that is hydrophobic, communicating on its inlet end with said top chamber and on its outlet end with a said chamber for water settling, which filter is further characterized by having a center tube for collection of permeate, communicating with said permeate chamber;
- i) a non-perforated tube sleeve guide, containing said second cross-flow filter;

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- j) a common housing to contain both said first and second filters, including an elongate housing wall having opposed first and second open ends, an elongate cylindrical interior surface defining a housing cavity, and a series of plates extending across said open ends of said housing wall, defining said chambers;
- k) a system for the recirculation of the retentate, including a port for outlet of the concentrate in fluid communication with said chamber for water settling, a circulation pump and a feed inlet having fluid communication with the feed chamber in the housing; and
- l) an outlet for clean fuel permeate in fluid communication with said permeate chamber.

12. (original) The apparatus for filtration of claim 11, further characterized by a ratio of cross-flow to fresh-feed in the range of 1:1 to 1:30.

13. (original) The apparatus for filtration of claim 11, wherein the pressure differential between the feed

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pressure and the permeate pressure is less than or equal to 50psi.

14. (original) The apparatus for filtration of claim 11, wherein the operating temperature is maintained below or equal to 130 degrees Fahrenheit.

15. (original) The apparatus for filtration of claim 11, wherein said first dead end filter has a pore size in the range of 0.5 μm to 100 μm .

16. (original) The apparatus for filtration of claim 11, in which said second hydrophobic cross-flow filter is made from polytetrafluoroethylene membrane.

17. (original) The apparatus for filtration of claim 16, wherein the polytetrafluoroethylene membrane is of 0.1 μm pore size.

18. (cancelled)

19. (cancelled)

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20. (cancelled)

21. (cancelled)

22. (cancelled)

23. (cancelled)

24. (cancelled)